

## FARM AND FIRESIDE



Dairying Failures.

T. H. HOSKINS, M. D.

There have been great advances in the study of the sciences of dairying, during the last ten years. Large credit is due to a number of enterprising men, who have devoted both money and time to the investigation of milk and its products, and also to improving the methods of breeding, feeding, and handling dairy stock. If I were disposed to criticize anything these investigators have done, it would be the haste some of them have shown to become instructors before acquiring a mastery of their subject. To this we owe much building with "untempered mortar" that has not endured; and, worse than that, the diffusion of erroneous notions among the people, harder to overcome than a simple, teachable ignorance.

Anxious to avoid the fault myself, and yet desirous to point out what I am thoroughly convinced are serious errors, I shall touch briefly in this article upon some important practical points which have been mis-stated and misinterpreted, and about which the popular mind is yet adrift. I do this with some reserve, and only after more than fifteen years of practical study, joined to careful closet investigation of both the chemical and physical sides of the question. The public are often at a loss to decide, where "doctors" and "professors" disagree; yet I believe that I shall make the points I touch upon sufficiently plain, and shall support my statements with good reasons, that most intelligent and well-experienced practical dairymen will agree with my conclusions.

### AIR IN CREAM.

For some time it was thought that churns to carry out the principle were introduced; that the passage of air into the cream during the process of churning promoted the separation of the butter. This idea is now exploded, and the churns are found only in garrets. I allude to it merely to show, in the light of what will be hereafter stated, how far away from any true conception of the facts the minds of many must have been when such a theory could have had currency.

### WITCHES IN THE CREAM.

Not infrequently the correspondence columns of agricultural journals contain queries headed, "Why Don't the Butter Come?" or something equivalent, in which the writer details the painful efforts of hours, and even days, over a refractory churnful of cream. Most inexperienced persons meet with this trouble; and not a few, also, who have made a good deal of butter, and made it well, when all natural conditions were favorable. The idea expressed by some that the cream was "bewitched," is the last resort, the world over, for the explanation of uncomprehended natural phenomena. It is only in the clear white light of science (knowledge) that the witch becomes totally invisible. She and the ghost are always best seen in the dark.

### TEMPERATURE IN SETTING.

As lately as seven or eight years ago it was the universal teaching that proper temperature for setting milk was in the vicinity of 60°. The best authorities agreed that at a higher temperature the milk would become sour before all the cream would come to the surface, while at a lower temperature it would never rise at all. When the Swedish method of setting in ice-water was first reported in America, it could hardly obtain serious notice, so contrary was the received notions. Now, it has been abundantly demonstrated that cream swims to the surface so much more readily at 40° than at 60°. This, in itself, a great advance, probably the greatest single step that has been made in butter-dairying. Yet it was not made by Professor, but was blundered upon in practice.

### THE "CURRENT" THEORY.

Some minds have a great fondness for mystifying plain matters. If one should see a quantity of apples going over a waterfall, it would never occur to him that when these apples reached the still water below it would be necessary to "create currents" in the pool before the fruit would float to the surface. The fact that apples are lighter than water would be considered a sufficient reason why they should float upon it; and as it is a rule alike of philosophy and common sense that when we have a perfectly satisfactory reason for any occurrence, it is folly to seek for any other, we should never think of a "current" theory. Having ocular evidence that a current submerged the apples, and that they came to the surface where the current abated, we should be satisfied. Now, the butter globules, though it is too small to be seen by the naked eye, is to the milk in which it swims what the apples in the case supposed were to the water. If we keep the milk in a state of agitation they do not rise; if the milk is at rest, and just in proportion as that rest is perfect, they swim to the top. The most rapid separation of cream takes place in that apparatus where the milk is quickest reduced to the proper temperature and most rigidly held there. Whenever you hear one of these "current" theorists blather forth, you will always find that he has a "new patent setting can" in the ante-room, which he would like to show you. Remember the air-churns, and eschew him.

### THE ANIMAL ODOR.

That the best butter is now made from cream raised in closed, and even in submerged cans, is what the boys call "a stinker" to those gentlemen who have long and learnedly held forth upon the pernicious "animal odor" in milk, which required the most careful ventilation to be rid of, and which absolutely ruined the flavor and keeping quality of the butter when retained. Various ingenious ways of getting around the stubborn fact are resorted to. It is hard indeed, after having explained how this "odor" originates,

what its chemical formula probably is, and how it looks or would look when isolated, to find it disappear, all at once, like a will-o'-the-wisp. No doubt there are "stinks" in milk, but no doubt, also, they are got there from filthy bags and teats, filthy hands, foul air, and like. Pure healthy milk has nothing in it that needs to be removed by ventilation. Ventilate your cow stables, keep your cows clean, give them good food and pure water, keep yourself and your surroundings clean while handling the product, from the udder to the butter-tub, and you will never be troubled with the "animal odor." Another ghost has been laid, another "witch" has disappeared.

### WASHING BUTTER.

Abundant experiment has shown that the natural flavor of butter cannot be removed by washing it with pure water. Careful manipulation, with the cream and everything else just right, will make good butter without washing. But the extra trouble is wasted.

### THE "GRAIN" OF BUTTER.

When the butter has "come," and appears in little irregular masses, from a pea's head to a large pea in size, is the time to draw off the buttermilk and wash the butter in the churn. This removes most of the buttermilk. After being thus gathered and removed from the churn, worked, washed and salted on the butter-worker at the proper temperature, we find upon breaking it, that it has a granular look. The mass seems to be made of little particles with a slightly glistening appearance. This is called the "grain." These small particles are partially kept apart by films of water, (after salting, this water becomes brine), and the peculiar texture thus imparted to the butter is a test of proper manufacture. Over-churn or over-work it, churn or work it at the wrong temperature, and the grain is gone, never to be restored; and with it is gone a large percentage of the selling value of the butter. Enough water (brine) must be retained to produce this appearance, with distinguishable "butter" from "grease." Consequently the most perfect grain is obtained by washing in the churn before the butter is "gathered."

### THE BUTTER GLOBULE.

To those who know nothing of the microscope and its revelations, a world remains hidden of which they can have little comprehension. To the naked eye milk appears a smooth, uniform fluid. To the eye aided by the combination of magnifying glasses, called a "microscope," (see of little things), it is a translucent fluid, in which floats a multitude of shining globules, and these globules are butter in its primitive state. We do not make butter when we churn, although we say so. When the process of churning has been continued until we can see little particles of butter in the cream, we say "the butter has come," and the next proceeding (after washing) is to "gather it." But, in reality, churning is a single process. There is no difference between the "coming" and the "gathering," except that the latter is visible, while the former is invisible to the unaided sight. All that we do when we agitate cream is a churn is to throw the butter globules strongly against each other. If the cream is too cold, we may do this forever and produce no butter, for the same reason that we cannot work butter into rolls, or prints, when it is too cold. The globules are too hard to stick together. They merely rattle against one another in the churn, like peas in a bag. If the cream is too warm, we can churn them together and then churn them apart again, because they are in too fluid a state to hold together against the action of the churn. So no butter comes in either case—there are "witches in the cream." The true exerciser, in such trouble, is a thermometer.

### MORE MYSTIFICATION.

The mystifiers have held high carnival on the butter globule. Nearly all of them (I do not know an exception among dairy professors) declare that it has a shell, as the German philosopher created an elephant, "out of the depths of his moral consciousness"; they have as much trouble with it as they had with the "animal odor." Some tell us that the cream must be kept until acidity is developed, in order to weaken the shell. One has said that the churn must be so constructed as to have a grinding action upon the cream, for the same purpose. A good many have seen the shell, not only upon the globule, but after it has been ruptured and the butter has escaped. They describe it as accurately as they described the "yellow oil," or as the old lady described the ague which the doctor made her throw up with a dose of lobelia. She said it looked for all the world like the yolk of an egg.

And yet we know that we can make butter as easily from sweet cream as from sour. We can make butter as quickly by shaking cream in a plain pine box as when agitated with the most scientific dasher ever invented. We know that at the right temperature we cannot carry a bottle of cream a few miles in a wagon-box without finding butter there at the end of our journey. So, far, we have common sense versus inaccurate science.

If we go further, we shall find that while 20 years ago all physiologists thought they could see a membrane on the little globule (and nothing is more than to deceive one's self on this point in using an imperfect instrument or a good one unskillfully)—now, more than half of those who have studied the question with ability, declared it to be naked. It is really a difficult question to decide, both optically, with the microscope, and by the use of chemical tests the highest manual skill and the best mental ability are requisite in the determination of this apparently simple problem. But the writer hopes he may say, without egotism, that though "only an ordinary M. D. and farmer," for fifty years ago, and several times since, has repeatedly, with many variations, a great variety of tests, both on the optical and chemical side, and concluded each time with a firmer conviction that the butter globules swim naked in the serum of the milk, requiring forcible contact, only at the right temperature, to cause them to adhere to each other and form butter.

When he began this study, he was not aware that a single prominent scientist held any other view than that the butter globule had an envelope. Now, he is happy in finding the majority upon his side; and he looks, in a few years, to see the point demonstrated, by some

ingenious experiment, so that there can be no longer any dispute. Practically, it is already proved, since the practice of the dairy would not be at all modified by the demonstration referred to. Its operations are conducted exactly as though no envelope exists, and with perfect results.

### Home Department.

The following come from housekeepers of experience and judgment, who have thoroughly tested and approved them.

**BOSTON BROWN BREAD.**—One pint each of Indian and Rye Meal; 1 cup of Molasses; 1 pint Milk or Water; 1 teaspoonful Soda; 1 teaspoonful Salt. Steam three hours, and then place in the oven and bake until well browned.

**GISSY PUDDING.**—Cut stale sponge-cake into thin slices, spread them with currant jelly or preserves, put two pieces together like sandwiches. Fill a dish with these; make a soft custard, pour over the cake while hot, and let cool before serving.

**POP-OVERS.**—1 pt. Flour; 1 pt. Milk; 2 Eggs. Eggs beaten to a froth, mix quickly, and bake in hot buttered cups. Serve with hot sauce.

**COFFEE CAKE.**—One cup very strong Coffee; 1 cup Butter; 2 cups brown Sugar; 3 Eggs; 1 pint Flour; 1 teaspoonful "Royal Baking Powder," (or 1 teaspoonful of Soda, and 1 do. of C. Tartar); 1 cup Sifted Raisins; 1 cup chopped Citron; 1 teaspoonful of Nutmeg, and 1 of Alspice; 1 cup of Sweet Milk. This will make two good-sized loaves.

**CHILLERS.**—1 quart Flour; 1 cup Lard and Butter in equal parts; 1 cup Sugar; 1-2 teaspoonful of "Baking Powder" (or Soda 1-2 teaspoonful, Cream Tartar 1 teaspoonful); 3-4 pint Milk; 2 Eggs. Flavor with Nutmeg, Sift flour, sugar and powder together, rub in the lard and butter, and add the beaten eggs and milk. Mix to a dough and fry.

**WASHINGTON CAKE.**—2 cups of Butter; 3 cups Sugar; 4 cups Flour; 2 teaspoonfuls of "Royal Baking Powder"; 5 Eggs; 1 cup Milk; 1 cup Sifted Raisins; 1-2 cup Currants; 1-4 cup chopped Citron. Flavor with Nutmeg and Cinnamon, one teaspoonful each.

**SPONGE CAKE.**—6 Eggs; 3 cups powdered Sugar; 4 cups sifted Flour; 1 teaspoonful Soda; 2 of C. Tartar; 1 cup cold Water, a pinch of Salt.

THE LABORATORY OF THE SYSTEM.—The stomach is the laboratory of the system, in which certain mysterious processes are constantly going on. These result in the production of that wonderful vivifying agent the blood, which in a state of health reaches every part of the system, and to the remotest parts of the system, but when the stomach is semi-paralyzed by dyspepsia, blood manufacture is carried on imperfectly, the circulation is sluggish, and the system suffers in consequence. Moreover, indigestion reacts upon the liver and bowels, rendering the first sluggish and the latter constipated. The brain also suffers by sympathy, and sick headaches, sleeplessness and nervous symptoms are engendered. Headache's Stomach Bitters reform this state of things, give permanent tone and regularity to the stomach and its associate organs, the bowels and liver, and ensure complete nourishment and increased vigor of the system. It is the most popular as well as the most efficient anti-dyspeptic and tonic in America.

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selected with care from the MANUFACTURERS, which I shall be pleased to show to all in want of such goods.

**NEW GOODS**

every week, and shall try to keep all goods in my line, that are needed by my customers, and the public.

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